

**ADDIS ABABA UNIVERSITY**

**COLLEGE OF NATURAL SCIENCE**

**DEPARTMENT OF ZOOLOGICAL SCIENCES**



**POACHING OF BUFFALOES IN WESTERN ETHIOPIA,**

**DIGA WOREDA, LALISA DIMITU DISTRICT**

**MSc THESIS**

**BY**

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## DECLARATION

I, the under signed, declare that this thesis is my original work; it has not been presented in other university, college or institutions, seeking for similar degree or other purposes.

All sources of the materials used in the thesis have been dully acknowledged.

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## **DEDICATION**

To my beloved sister Nagase Lemi, who had a great dream and delusion for my success in education but passed away at a very early age without seeing any of my success.

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## **ACRONYMS**

CBD-Conservation on Biological Diversity

FGD-Focus Group Discussion

GPS-Global Position System

NMAE-National Metrological Agency of Ethiopia

SPSS-Statistical Package for the Social Sciences

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## **ABSRTACT**

A study on the poaching of buffaloes in western Ethiopia, Oromia Regional State, East Wollega Zone, Diga Woreda, Lalisa Dimtu district (Figure 1) was conducted from October 2015 to June 2016. Data on the impacts of poaching on buffaloes in the study area was collected based on the questionnaire survey, field observations and focus group discussions. Data on the reasons behind buffalo poaching in the study area was conducted based on the case study, questionnaire survey and discussion with key informants. Questionnaires, relevant published and unpublished literature, GPS, binocular, camera, data sheets, topographic map of the area and its surroundings (1: 200,000) and other necessary field gears were materials used for this study. Poaching of buffaloes exists in all over the world and experienced more in developing countries. The present study indicated that the practice of poaching in Lalisa Dimtu district area was common and frequently exercised as a culture. Therefore, main motive for the activities of poaching was a cultural heritage passed down from their ancestors. The presence of freshly killed buffalo, remains of dead buffaloes and trophies hanged up on the wall or in front of the poacher's house indicate as poaching of buffaloes still practiced in the area. This hanging of trophy is not discouraged by any authority in the study area. Therefore, this study was conducted to investigate the impacts of poaching on buffaloes and with special emphasising of the buffalo's conservation strategy in Diga Woreda, Lalisa Dimtu district. Poaching of buffaloes in the study area result in disturbance and migrations of buffaloes out of the study area, and the fear of peoples in the presence of buffaloes in the study area was till observed. These findings of the study were important in making management decisions on poaching and it was base line for future monitoring of buffaloes conservation of the study area.

# **1. BACKGROUND OF THE STUDY**

## **1.1. Introduction**

The bush meat trade has long been recognized as a major threat to biodiversity in forest areas of Africa. In those regions, bush meat trade is a significant component of local and even national economies (Bowen-Jones et al., 2003). Bush meat contributes significantly for food security, often representing the single most important source of protein for communities in rural areas. For example, hunting provides 30-80% of protein to rural households and virtually 100% of animal protein (Nhasi, 2008). However, hunting associated with the bush meat trade is incomparable and is resulting in widespread wildlife population declines and eradication of large bodied species. Consequently, the current food security benefits associated with bush meat is likely to decline. In African forest biomes, for example, protein supplies from bush meat are expected to drop by 81% over the next 50 years. The bush meat trade is thus a crisis from both a conservation and human development view (Bennett, 2002).

Hunting of wildlife by humans is an ancient practice. Researches over the last two decades have shown that humans may have a significant influence in structuring terrestrial ecosystems. Studies in tropical forest ecosystems provide evidence that increased human hunting activities have led to reductions and local extinctions of some wildlife populations. Consequently, the exploitation of animal populations has been highlighted as one of the central reasons why species are currently threatened. Although law enforcement patrols attempt to control poaching, the expected economic benefits from the sale of bush meat, derived from wild animals, are far greater than the costs associated with a low probability of arrest and punishment; thus poaching is a persistent and widespread problem for animal species conservation (Lindsey *et al.*, 2011).

Hunting without legal permission is illegal in Ethiopia. Partly, due to such uncontrolled hunting, buffalo populations in many areas, including western Ethiopia, have declined highly in recent years. Hunting seems to hold very little meaning for the hunters' relationship to wildlife or nature. In western Ethiopia, poaching is usually described as a culturally important activity. Therefore, poaching is a conservation concern, since it cause severe impacts on buffaloes in the study area. Continual conservation of wildlife resources has been the core objective of wildlife managers and biologists in many countries in Africa. Since the impacts of poaching of buffalo is very high in this region, this research is used to identify old culture in the community that considered as a great person when he kill buffalo and identify how humans interact with buffaloes in the area. The research also serves as basis for other researchers on what activities done to conserve buffaloes in the country.

## **1.2. Statement of the problem**

For long periods of time, wildlife meat and parts of their bodies have been utilized by poachers for subsistence life and commercial purposes. However, an increase in human population caused a severe pressure on wildlife resources, which subsequently threatens their existence and sustainability. Uncontrolled use is a concern to natural resources conservation in Africa. It affects biodiversity that provides important ecosystem services, ecosystem dynamics and threatens the future of targeted species.

Poaching of buffalo is believed to be a key driver of serious population declines and local species extinctions in many parts of the world. Hunting certain species for meat is critical in Africa and special to east Africa in threatening species for extinction. Poaching is a serious problem in today's society. As a result of extreme loss of wildlife species including buffaloes, many governments have adopted a participatory forest conservation approach for conservation.

### **1.3. OBJECTIVES OF THE STUDY**

#### **1.3.1. General objective**

The present research project was designed to assess impacts of poaching and the reasons behind poaching of buffaloes with special emphasis on the conservation of the species, in Oromia Regional State, Diga Woreda, Lalisa Dimtu district.

#### **1.3.2. Specific objectives**

- To identify reasons behind buffalo poaching in the study area.
- To identify the impacts of poaching on the buffalo in the study area.
- To identify people attitude towards the future conservation of buffaloes in the study area.

## **2. LITERATURE REVIEW**

For centuries, wildlife has been utilized for subsistence and commercial purposes. However, an increase in human population causes a severe pressure on wildlife resources, which subsequently threatens their existence and sustainability. Uncontrolled use is a concern to natural resources conservation in Africa. It affects biodiversity that provides important ecosystem services, ecosystem dynamics and threatens the future of targeted species (Lindsey *et al.*, 2011).

Poaching of wildlife is believed to be a key driver of serious population declines and local species extinctions in many parts of the world. Hunting certain species for meat is critical in Africa and especial to East Africa in threatening species for extinction. Therefore, poaching is a serious problem in today's society. It is the act of violating wildlife law, and well documented in literatures. It was identified as the main cause for the decline of wildlife population in eastern part of Africa. Hunting accelerates extinctions, mostly of large mammals. This is usually resulted due to the low reproductive rates, population density, dispersal ability, trophic level and body size of large mammals. Larger, longer-lived and slower reproducing large animals are unable to compensate for high rates of harvesting because the potential for the population recovery over short time is low. African buffalo, leopard, and lion generate 42% of income from hunting for Tanzania Wildlife Division, with African buffalo alone generating 22.1%. A recent study suggested that law enforcement is crucial system to control illegal exploitation of wildlife populations. Many governments have adopted a participatory approach to conservation as a result of extreme loss of wildlife species (Nhasi, 2008).

### **2.1. Hunting methods of wildlife**

Hunting of wildlife is regulated in most African countries through wildlife legislation and permitting systems that specify restrictions on the times and places that hunting is permitted, the

species that may be hunted and the hunting methods that may be used. Snaring is the most common poaching method and is particularly not useful from a conservation view as it is highly effective, difficult to control, unselective in terms of the genders or species of animals (Hofer *et al.*, 2000).

Snares can be made from natural fiber or nylon (which is used when targeting small mammals and birds) or it made from wire, which is used when targeting larger mammals. Wire for snare is readily available in many areas, from telephone and electricity lines and extracted from burnt tyres (Lindsey *et al.*, 2011).

Snares can be used for catching species ranging in size from birds and rodents up to buffaloes. It is largely unselective, which frequently resulting in the collateral death of animals that are not the primary target (Hofer *et al.*, 2000). Because of the low value of snares, poachers often check them infrequently, resulting in a high degree of wastage when animals are killed and rot without being retrieved. The carcasses of animals in snares tend to attract carnivores that become snared in turn. Consequently, snaring represents a significant source of mortality for several predator species. Finally, there are animal welfare issues associated with snaring, as the method results in a slow and painful deaths and high rates of severe, non-fatal wounding (Lindsey *et al.*, 2011).

Other common bush meat hunting methods include the use of rifles, muzzle-loaders, shotguns, dogs, fire, and in some cases, gin traps, pitfall traps and poison (Lindsey *et al.*, 2011).

## **2.2. Incidence of poaching**

Several temporal and spatial patterns in the incidence of poaching in the areas are emerging. Wildlife has been eradicated from many areas outside of formal conservation networks with the effect that poachers are increasingly focusing their efforts on protected areas. Levels of poaching and the consumption of bush meat are higher in areas closer to human settlements. Poaching is typically more frequent in areas with poor anti-poaching enforcement, in areas where wildlife

concentrates, during the passage of migratory wildlife and during the late dry season when wildlife is concentrated around water-sources. Poaching also tends to spike when food-shortages are severe, and at times of the year when the agricultural time-commitments of communities are low (Brown, 2007; Holmern *et al.*, 2007; Lindsey *et al.*, 2011).

### **2.3. Ecological consequences of poaching**

Ecological consequences of poaching include overall wildlife population declines. The reductions in biodiversity and local disappearances of many species within and outside protected areas were associated with loss of ecosystem functionality. The impacts of poaching are likely to increase in future as demand for bush meat is increasing in many areas, resulting in increased pressure on remaining wildlife populations (Caughley and Sinclair, 1994).

### **2.4. Economic importance of African buffalo**

African buffalo are economically important for both the tourism and the trophy hunting industries. Commercial uses of wildlife on their private land, such as wildlife harvesting (for meat and skins), and ecotourism provide profitable income for farmers in regions where this type of private land use is permitted. Private land holdings with populations of African buffalo can charge up to twice as much as for ecotourism and hunting as competitors, providing incentive to have buffaloes on the land. These ranches and private reserves also provide employment for local communities. African buffalo are poached for bush meat (Carruthers, 2008; Lindsey, *et al.*, 2009; Lindsey, *et al.*, 2013; Williams, *et al.*, 2000).

The negative impacts of African buffaloes are crop damage and disease vectors. Like other wildlife, they may be a harmful in agricultural fields. Buffaloes are also blamed for transmitting disease to domestic cattle herds. Buffalo can act as a reservoir for bovine tuberculosis

(*Mycobacterium bovis*), re-infecting cattle herds or spreading the disease to healthy herds. A growing concern is foot-and-mouth disease and the potential for transmission. A risk of foot-and-mouth disease to humans is increased due to unsafe food handling practices. Another possible threat is brucellosis (g. *Brucella*) infection via the consumption of infected bush meat. African buffalo are dangerous animals because of their size, aggressive nature, and formidable horns (Alexander *et al.*, 2012; Clifford *et al.*, 2013; Michel and Bengis, 2012)

## **2.5. Key drivers of poaching and the Bush meat Trade**

The drivers of poaching for wildlife are varied, since it was done to obtain meat for direct consumption (subsistence) and immediate community trade, for commercial trade in urban Centre's or even international markets. There are indications that poaching is increasingly commercial in many areas in response to increasing human populations in rural communities and in growing urban areas. In rural areas, often close to wildlife populations, bush meat is preferred because it is normally cheaper than alternatives. In urban areas, demand for bush meat is driven by preferred for its taste and is commonly more expensive than other types of protein (Bloom *et al.*, 2008). It is clear that illegally sourced bush meat contributes significantly to economies and to food security in many countries. Furthermore, most forms of poaching for bush meat represent an extremely wasteful and inefficient form of wildlife use, which captures a tiny fraction of the value of the resource it destroys (Brown, 2007).

Poaching has served as a major coping and adaptive strategy against poverty. It is estimated that about 61% of poachers hunt for their own consumption, 8% for cash and 31% for both purposes. Other motivation that drives poachers may be culture, which leads and enforces one to hunt for the sake of status or tradition (Brown, 2007).

Others suggested reasons such as obtaining a trophy specimen for personal use, Thrill killing and necessity of obtaining food for survival. To earn such rewards, poachers face significant risks in their daily activities. Some of the risks that they faced include social conflict with those people living around the hunting area, economic crisis due to buying of bullet and gun rent for poaching. In addition, hunters faced risks that include attack by wounded animals or other aggressive animals such as lion or snakebite, infection, broken bones and contraction of malaria. The factors that push one individual to poaching may be different from the others. Poachers may be also introduced to poaching by a family member, usually by a father or grandfather and close friends. This cultural support from family, society and belief systems have continually reinforced and encourage them for poaching (Wittemyer *et al.*, 2008).

### **2.5.1. Human encroachment into wildlife areas**

Increasing human populations are resulting in increased encroachment of wildlife areas and increase pressure on natural resources (Kiringe *et al.*, 2007). Several categories of protected areas in Ethiopia are partially settled as the game management areas. In some cases, the settlement of wildlife areas has been facilitated by efforts to control tsetse fly *Glossina* spp. (Muriuki *et al.*, 2005).

In many areas, human populations are increasing rapidly on the boundaries of protected areas and in some cases, expanding into wildlife areas. Such trends are driving increased levels of poaching and make the problem more difficult to control. Poorly planned/positioned developments (such as roads, schools, clinics, boreholes) makes arrival of people in or near to wildlife areas. This situation makes people to relying on wildlife for survival. Forestry and mining are often practiced in wildlife areas can be stimulating the arrival of large numbers of people encourage poaching. In addition, forestry and mining, which are often practiced in wildlife areas and can dramatically increase the

vulnerability of wildlife to poaching due to the opening of roads and the associated arrival of job seekers and their families. For example, a major spike in poaching was observed following an arrival of people to mine young animals (Kiringe *et al.*, 2007).

The frequency of poaching declines with distance from human settlements (Lindsey *et al.*, 2011). Similarly, the rate of bush meat consumption falls with distance of human settlements from wildlife populations, and drops steeply from ~30 km (Brashares *et al.*, 2011).

In some cases, logging companies perceive bush meat as a free useful to supplement workers' income (Wilkie *et al.*, 2011). The development of industrial logging, for example, led to a 69% increase in the population of nearby towns and a 64% increase in bush meat supply, the majority of which benefit the immigrant populations rather than indigenous peoples with a long-standing and legitimate claim to the wildlife resource (Poulsen *et al.*, 2009).

### **2.5.2. Inadequate penal systems and lack of enforcement**

In most countries, the gazetted punishments for poaching provide inadequate and do not reflect the value of the resource being destroyed. Furthermore, wildlife laws are poorly enforced due to inadequate investment in anti-poaching and low conviction rates for poachers. There is a tendency for the police and judiciary to treat wildlife crimes as being of low priority, even in comparison with other environmental crimes (Barnett, 2002; Yirmed Demeke, 2003).

### **2.5.3. Lack of alternative livelihoods**

Many rural areas in which wildlife occurs are characterized by lack of economic activity or employment opportunities. Poaching and the sale of bush meat provides an opportunity for quick cash income for people with few alternative livelihood options. However, poaching and sale of bush meat is unlikely to be a sustainable livelihood option in the long term (Brown, 2007).

#### **2.5.4. Lack of alternative food sources**

Areas in which wildlife continually exist was often characterised by low annual rainfall, poor soils and the presence of tsetse flies *Glossina* spp., thereby limiting the potential for agriculture and livestock production. Consequently lack of food security is common in the area. Therefore, a few alternative food sources in the area was bush meat exist there (Foerster *et al.*, 2012).

#### **2.5.5. Lack of clear rights over wildlife or inadequate benefits from wildlife**

There is a failure of governments to lower level user rights to pay out adequate income from wildlife appropriately. The local people living around wildlife receive few or zero benefits from the resource in many areas. Consequently, the only means by which communities in such circumstances can benefit meaningfully from wildlife is by hunting it illegally (Suich *et al.*, 2009; Holmes, 2007).

#### **2.5.6. Political instability, corruption and poor governance**

Poaching appears to spike during periods of political instability or poor governance, due to breakdowns in law enforcement and increase relying people on natural resources for survival (Lindsey *et al.*, 2011)

#### **2.5.7. Demand for wildlife body parts for traditional medicine and ceremonies**

In some cases, wildlife is hunted specifically for body parts that are used/sold for traditional medicine and ceremonies. In other cases, such products simply increase the profitability of general illegal bush meat hunting (Haule *et al.*, 2002).

#### **2.5.8. Abundant supplies of wire to make snares**

The increasing prevalence of fencing, electricity and telephone cables means that there is an increasing abundance of wire in rural areas which is commonly stolen and used for making snares.

In recognition of the threat present by the bush meat trade, the Convention on Biological Diversity (CBD) has established a binding agent or group on bush meat. This binding group has since established a set of recommendations for addressing the threat (Secretariat of the Convention on Biological Diversity, 2011).

## **2.6. Impacts of poaching on wildlife**

Hunting without a permission is illegal in Ethiopia. Partly due to such uncontrolled hunting, wildlife populations in many areas, including western Ethiopia, have declined highly in recent years. Poaching is thus a major conservation concern to provide insights into the cultural and social context of poaching. In different part of Eastern Africa, poaching usually described as a culturally important activity, is a conservation concern, due to severe declines in wildlife populations (Lindsey *et al.*, 2011).

By contrast, hunting seems to hold very little meaning for the hunters' relationship to wildlife or nature. Study participants had recently experienced dramatic degradation of their environment (e.g., disappearance of wildlife, lack of grazing for livestock), but seemed to accept these changes in an almost predetermined manner. Attempts to understand and explain these changes were limited. Hunting of wildlife by humans is an ancient practice. Research over the last two decades has shown that humans may have a significant influence in structuring terrestrial ecosystems. Studies in tropical forest ecosystems provide evidence that increased human hunting activities have led to reductions and local extinctions of some wildlife populations and that many populations of tropical species have been lost. Consequently, the exploitation of animal populations has been highlighted as one of the central reasons why species are currently threatened. Although law enforcement patrols attempt to control poaching, the expected economic benefits from the sale of bush meat is far greater than the costs associated with a low probability of arrest

and punitive fines; thus poaching is a continually exist, widespread problem for animal species conservation (Stoner *et al.*, 2007).

The bush meat trade has long been recognized as a major threat to biodiversity in forest areas of Africa. In those regions, the trade in bush meat is a significant component of local and even national economies (Bowen-Jones *et al.*, 2003). Bush meat contributes significantly to food security, often representing the single most important source of protein for communities in rural areas. For example, hunting provides 30-80% of protein to rural households and virtually 100% of animal protein (Nhasi, 2008). However, hunting associated with the bush meat trade is unsustainable and is resulting in widespread wildlife population declines and eradication of larger bodied species. Consequently, the current food security benefits associated with bush meat are likely to loss strength (Bennett, 2002).

The scale and impacts of the bush meat trade have received much less attention. This lack of focus has perhaps been due to a misconception that hunting for bush meat is largely motivated by insufficient and is practised on a limited scale. However, there has been a gradual realisation of the significance of the problem following publication of a number of case-studies. Indications are that hunting for bush meat trade is an initial threat which seen up during periods of bad governance or political instability (Hatton *et al.*, 2001; Jambiya *et al.*, 2007; Lindsey *et al.*, 2011).

However, the threat constitute by poaching and the bush meat trade also occurs widely during times of peace and stability (Okello and Kiringe, 2004; Secretariat of the Convention on Biological Diversity, 2011).

In areas where poaching has been allowed to proceed with little or no control, during and immediately after the civil war, settlement during land reform and in areas adjacent to refugee camps. In such areas the effects on wildlife populations have been highly destructive, resulting in

dramatic population reductions and local eradications of various species (Hatton *et al.*, 2001; Lindsey *et al.*, 2012; Jambiya *et al.*, 2007). Poachers typically target larger species due to the higher volumes of meat produced. However, across multiple sites in East and southern Africa, there is a declining prevalence of large-bodied species in bush meat markets due to over-hunting (Barnett, 2002).

In some countries, vast wilderness areas exist from which wildlife has been largely depleted by poaching, resulting in the 'empty forest' syndrome. In many areas, the threats of excessive poaching for bush meat and habitat loss act synergistically with severe consequences for wildlife (Wilkie *et al.*, 2011).

As wildlife disappears from many areas outside of protected areas, poachers are likely to focus their efforts increasingly on parks networks. With increasing demand (due to increasing human populations), and declining supply, the hunting pressure on remaining wildlife populations is likely to increase. As wildlife populations decline, sustainable harvests will decline accordingly and they will become vulnerable to the conservation problems associated with small population sizes. Without urgent intervention to address the issue of poaching, wildlife resources will be lost across large areas of the continent, with severe ecological, economic and social impacts (Caughley and Sinclair, 1994).

Poaching of wildlife remains a persistent threat to the wildlife across the country. Despite poaching becoming increasingly high and widespread, its impact on the wildlife populations has not caught the attention of policy makers as it is assumed to be minimal (Barnett, 2000). This is partly because many rangelands experiencing intensive poaching remain un-researched as the majority of them fall outside protected areas. Moreover, unregulated legal hunting poses an additional threat to the wildlife population. Many rangelands that support legal hunting have experienced significant

declines due to uninformed excessive quota allocated to them and from hunters without moral, who kill in excess of their allocated quotas. Controlling local legal hunting is especially difficult because many local wildlife offices are particularly have few members, thus most hunting goes unsupervised resulting in more animals killed than is indicated on the hunting permits (Rija, 2009). Coupled with the selective nature of sport hunting, both poaching and local licensed hunting have the potential to drive individual species to population decline (Stoner *et al.*, 2007) and local eradication with unknown consequences on the ecosystem functions of the rangelands (Rija, 2011).

## **2.7. Hunting for bush meat and the law**

Poaching is an almost exclusively male activity, while women are more likely to do the butchering of the meat (Brown, 2007; Lindsey *et al.*, 2011). In many cases, poachers are poor, with low levels of education and livestock ownership (Lindsey *et al.*, 2011; Lindsey and Bento, 2012).

In some ecosystem however, hunting households are sometimes valuable than non-hunting households and hunters appear to be those individuals that have the time and opportunity to hunt. In some cases, hunters enjoy elevated social status as a result of their profession (Brown, 2007). During this women exhibit a preferred for men who hunt. In areas where the hunting grounds are relatively distant from hunters' homes, meat carriers are employed (Brown, 2007). Poaching for wildlife appears to operate on a continuous, from that done partially for subsistence and partially for trade to local markets and urban or even international markets. In a minority of instances, poaching is practised primarily for sport. For example, 'taxi hunts' are organised illegally on farms where various hunters set off with dogs to hunt after placing bets on the outcome. In virtually all cases, poachers use a portion of their catch for their own consumption and in some areas bush meat

provides a significant contribution to household food security. However, a proportion of bush meat is also almost always sold, most commonly within local communities. Where bush meat is purchased close to the hunting ground, buyers tend to be those with cash incomes, such as business people or teachers, or even local government officials and policemen (Lindsey *et al.*, 2011; Lindsey and Bento, 2012). Bush meat sold in areas close to the hunting grounds is usually sold for cash, which is used by hunters to purchase soap, clothes, beer, or to pay for school services (Brown, 2007; Lindsey *et al.*, 2011). In some instances in rural areas, hunters trade bush meat for grain (Lindsey *et al.*, 2011). Where bush meat is purchased in urban areas, buyers are likely to be relatively richer than those in rural areas due to the higher prices of bush meat (Barnett, 2002).

There is an indication in some study-sites that the bush meat trade is becoming less motivated by insufficient needs, and increasingly commercial in nature due to increasing market demand both from local communities and distant urban centres including international cities (Barnett, 2002).

In rural area, bush meat is often traded in open-air markets, suggesting that enforcement and fear of their act among traders is minimal (Barnett, 1998).

In most African countries, hunting is regulated and being controlled through systems of licensing and quotas. In some countries, communities have also been allocated limited user rights over wildlife, which provide scope for local people to hunt in possession of the appropriate permits or licenses within specified limits and under certain conditions (Taylor, 2009; Lindsey *et al.*, 2007).

Hunting laws often specify restrictions on the time of year in which wildlife can be hunted (with the imposition of 'closed-seasons'), restrictions on hunting protected species, exclusions on hunting young animals or pregnant females and exclusions hunting in national parks and some

other categories of protected areas. There are invariably restrictions on the hunting methods that can be used by bush meat hunters are typically illegal (Morgera, 2009).

## **2.8. Spatial, temporal patterns in poaching**

Wildlife is rapidly disappearing from unprotected lands, due to a wide collection of threats (Newmark, 2008) and poachers are increasingly focusing their efforts on protected areas. Within protected areas, poaching is more prevalent in areas close to the borders and near human settlements (Marealle *et al.*, 2010). Greater distances mean increased time, effort and costs for hunters to find wildlife and transport meat to their home or place of sale. Greater time spent in protected areas also increases the risk of being arrest by anti-poaching game scouts (hereafter referred to as ‘scouts’). During a period of high poaching intensity and low levels of enforcement, there was a positive relationship between distance from the boundary and occurrence of buffalo (Metzger *et al.*, 2010).

Similarly, the occurrence of hunters’ traps declines with distance from the boundary. Bush meat hunters tend to focus hunting efforts in areas where wildlife concentrates, such as close to water holes or along rivers (Lindsey *et al.*, 2011), or even close to flowering or fruiting trees (Lindsey and Bento, 2012).

There are consistent temporal patterns in the frequency poaching for bush meat. In some areas peaks occur in the late dry season when wildlife is concentrated around water sources (Brown, 2007; Holmern *et al.*, 2007; Lindsey *et al.*, 2011).

Bush meat is also affected by patterns in agricultural activity which determines household food availability and the amount of time people have available for hunting (Lindsey *et al.*, 2011).

### **3. RESEARCH DESIGN AND METHODOLOGY**

#### **3.1. Description of the Study Area**

##### **3.1.1. Location and Topography**

The study was carried out at Lalisa Dimtu local administrative area of Diga Woreda located in East Wollega Zone of Oromia Regional State (Figure 1). It is located about 52Km West of Nekemte and 40Km West of Efa town of Diga Woreda. The study area is generally located about 380 Km West of the capital city, Addis Ababa. It is situated between 9° 0' 0" to 9° 10' 0" N latitude and 36° 10' 0" to 36° 20' 0" E. Lalisa Dimtu is delimited with different kebeles includes:- Bareda Soroma in the South, Woyessa Dimtu in the North, Melka Bayeti Jirma in the West, Bech Bech in the East. The study area was selected because of the frequent practice of poaching in the culture of the society.

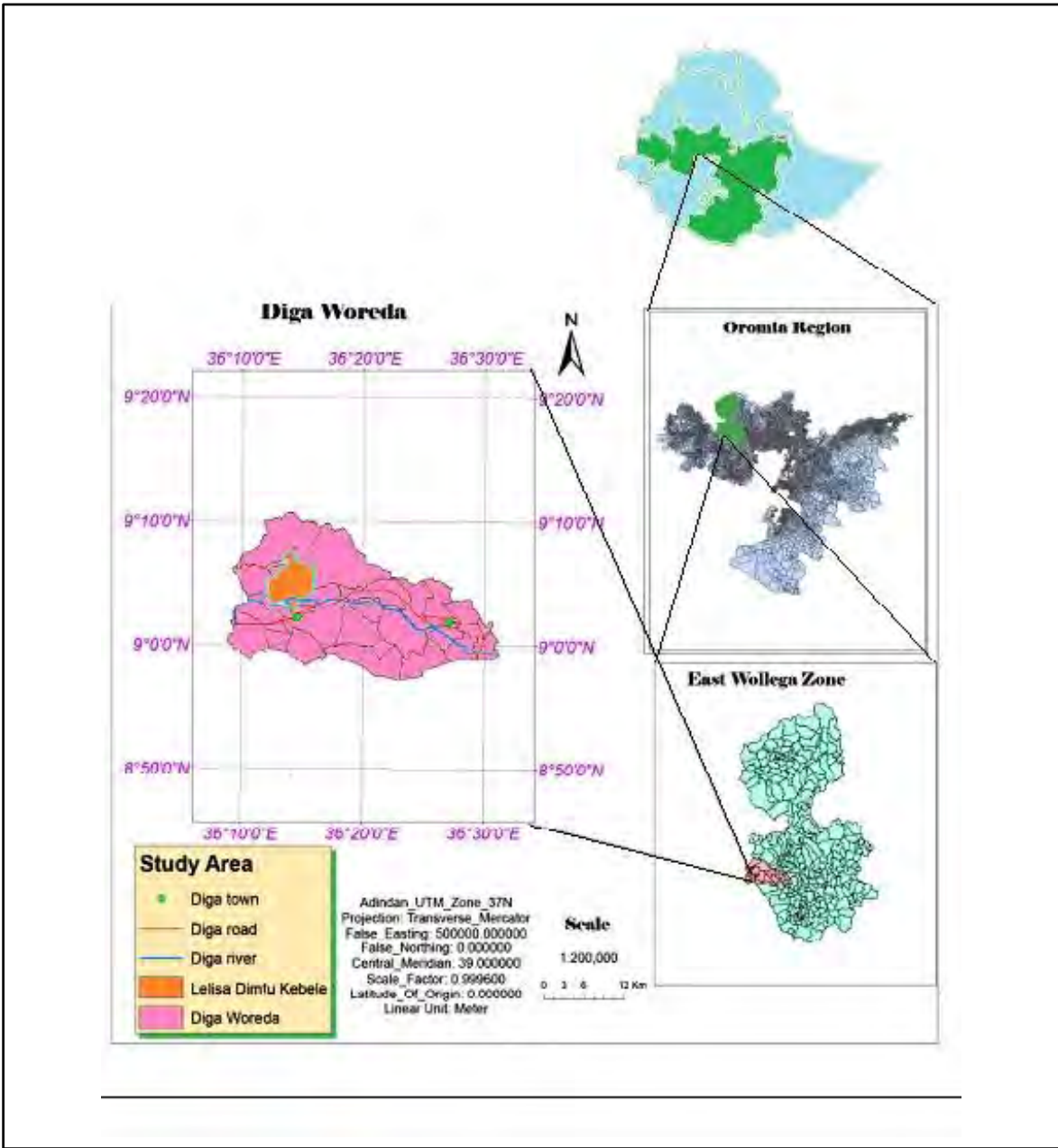


Figure 1. Map of the study area.

### 3.1.2. Climate

#### Rainfall

Based on ten years (2006 to 2015) metrological data collected from Didessa station, the study area receives annual rainfall as shown in Figure 2. The rainy season mostly extends from April to October with maximum rain nearly from June to September. A yearly rainfall ranges about 538.8mm to 2090.1mm per annum. A peak rainfall occurs in June (National Metrological Agency of Ethiopia or NMAE).

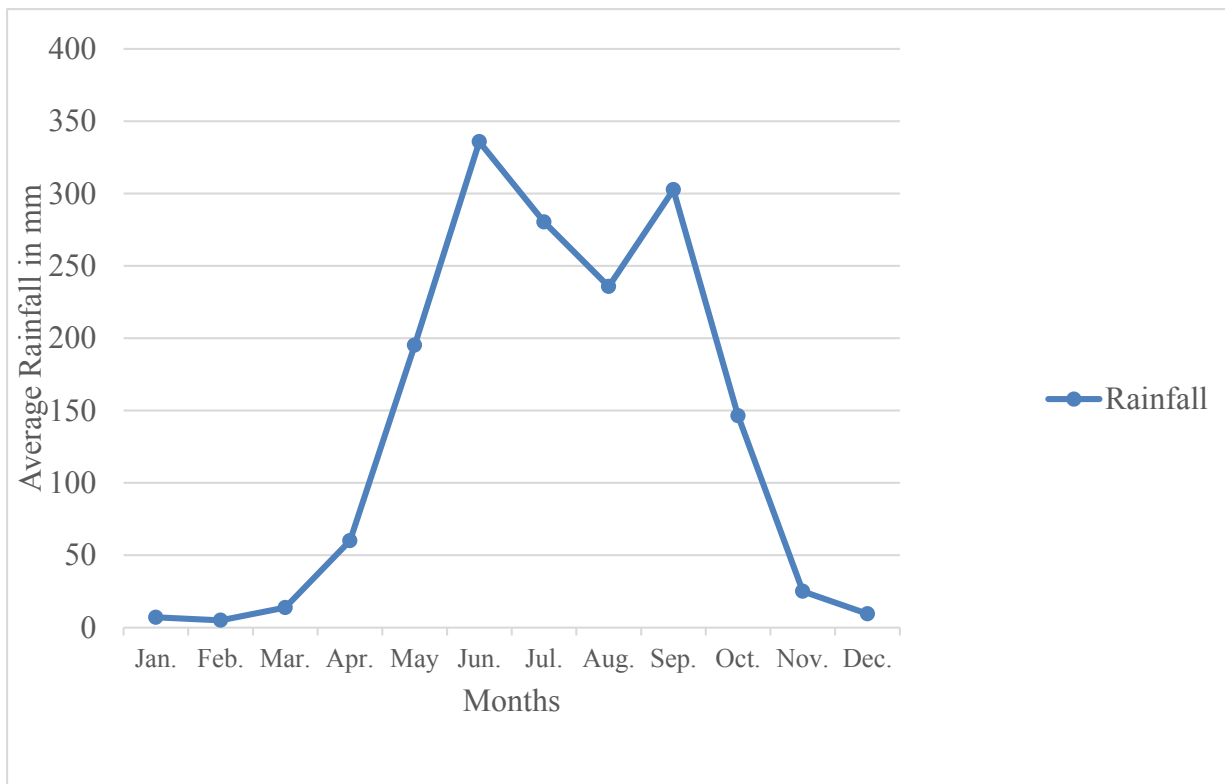


Figure 2. Average rainfall of each months starting from 2006 to 2015 years in mm

## Temperature

Based on data obtained from NMAE, differences in temperature throughout the year are small (Figure 3). The mean minimum and maximum annual temperature of the study area was 14.6°C and 31.45°C respectively. The hottest months are February and March while the coldest months are July and August (Source: National Metrological Agency of Ethiopia).

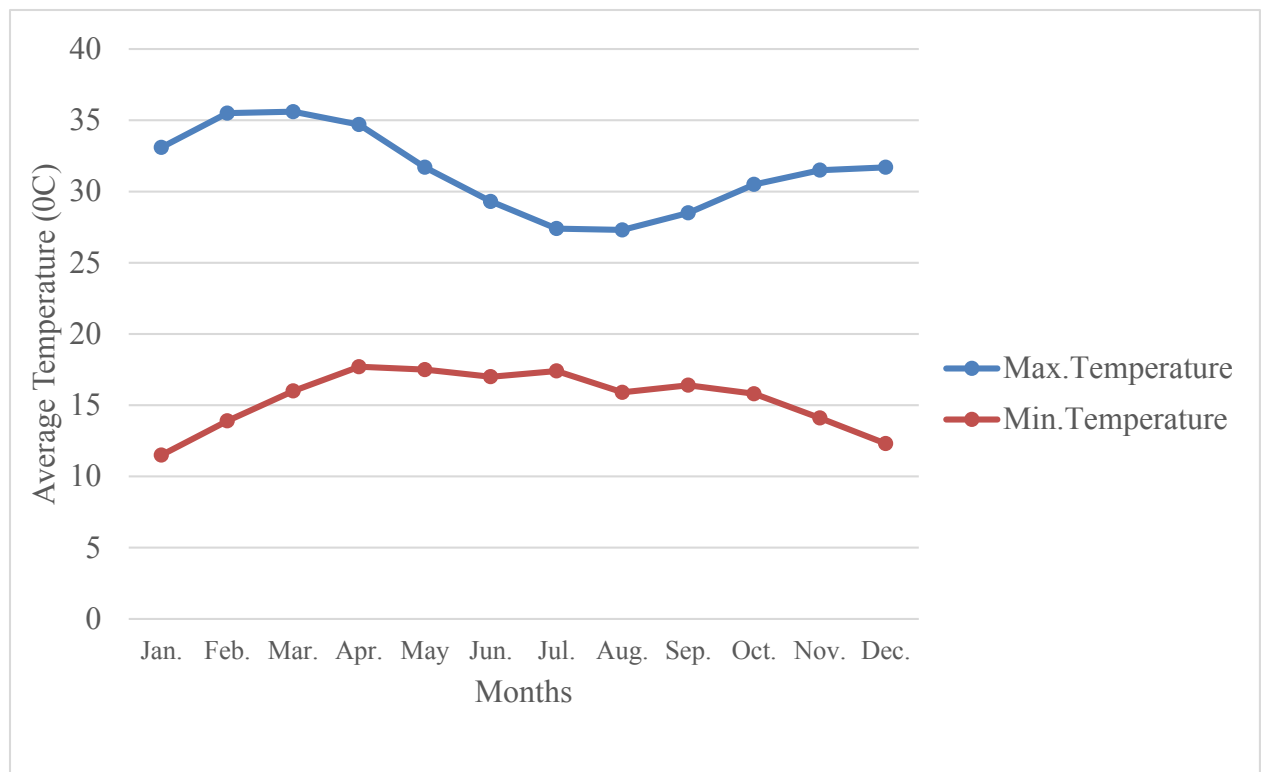


Figure 3. Average temperature of each months starting from 2006 to 2015 years in °C

### **3.1.3. Flora and fauna**

#### **Flora**

The main crop cultivated in the study area are Tef, Sorghum, Maize and Potato. The wooded grassland is covers most of the undulating landscapes. Although the grass and shrub species show local variation, grass species dominates. The tree species are deciduous type that includes *Combretum sp.* in association with *Juniperous procera*, *Podocarpus falcatus*, Mango, Ficus, Acacia, Bamboo and other broadleaved tree species. The vegetation zone is classified as Cumbretum-Terminalia woodland in the classification of Ethiopian flora (Friis *et al.*, 2011).

#### **Fauna**

The main livestock production in the study area are Cattles, Goats, Chickens, Sheep and equines. Even though there is no wildlife conservation area, Pig (*Patamochoetus larvatus*), Buffalo (*Cyncerus caffer*), Porcupine (*Hynrix cristata*), Grivet Monkey (*Chlorocebus aethiops*) and Olive Baboon (*Papio anabis*) are Wild animals found in the study area. From its floral composition, climatic conditions the water regime the area is believed to contain a varied species of wildlife.

## **3.2. Materials and methods**

### **3.2.1. Materials**

In conducting this research, questionnaires, relevant published literature, GPS, binocular, camera, data sheets, topographic map of the area and its surroundings (1: 200,000) and other necessary field gears were used.

### **3.2.2. Methods**

Due to the interdisciplinary nature of this research, it was necessary to use different data collection instruments such as semi-structured questionnaires; focus group discussions and unstructured

observation schedules (Bliss *et al.*, 1983). Each of the activities involved the application of different methods that were appropriate for the achievement of the objectives as shown below.

### **3.2.2.1. Preliminary study**

The objective of the preliminary field survey was to know the location, topography and to get first hand and secondary general information on the seasonal movement of buffaloes in the study area and to get general information on the human-buffalo interaction in the study area.

### **3.2.2.2. Reasons behind buffalo poaching**

For this study, a case study design was employed. The case study method helps one to make direct observations and collect data in natural settings (Bromley, 1986). The data and information collected were include damages caused by buffalo on humans or their belongings (Kangwana, 1996).

Field assessment was undertaken during day and night to observe the time buffaloes come to the crop lands, and control measures used by the local people was recorded (Jachmann, 1988; Manspiezer and Yilma Delellegne, 1992). Data was also collected from questionnaire survey and discussions with key informants. In addition to this, relevant information about their knowledge, opinions, and attitudes regarding the reasons behind poaching of buffaloes in the study area was collected from FGD (Bless and Achola, 1990). Open-ended question format was used in the focus groups to maximize exchange and better determine the potential range of responses to each topic area. Participants in the focus groups included headmen, animal control officers and the local people.

### **3.2.2.3. The impacts of poaching on buffaloes**

The impacts of poaching on buffalo in the study area were investigated through observations, FGD and questionnaires following Anderson and Pariela (2005). During this activities dead buffalo by poachers was observed and samples was taken by camera. Dry and wet season movement pattern of buffaloes were studied based on direct and indirect observation of buffalo signs, foot prints, and feeding signs (Kangwana, 1996). In addition, open-ended and closed questionnaires were prepared and distributed to the peoples selected by simple random sampling methods.

### **3.2.2.4. People attitude toward future conservation of buffaloes**

During these activities the needs of protected area and fear of peoples in the presence of buffaloes in the study area was collected through questionnaire survey and discussion with key informants.

When using questionnaire and FGD specific districts are purposively selected that represent one of the highest practice of poaching of buffalo. Out of 21 Kebeles found in Diga district, one Kebele namely Lalisa Dimtu was selected through stratified random sampling for this study. In the second stage, households' sample frame was established by collecting complete landholders or peoples list record from their respective administration office. Accordingly, the total number of peoples living in the Kebele was 5149 (3024 males and 2125 females).

Since it was difficult to collect data from all population, representative sample was selected by random sampling methods. In random sampling, research subjects have equal opportunity of being selected from the population and the model is objective in nature (Ghosh, 2002; Welman *et al.*, 2005).

For this study only male respondents above 25 years of age were selected as it was known that only males participate in poaching. Questionnaire survey has involved 114 (20%) of the total

household selected using simple random sampling techniques from the total population of 570 males above 25 years age living in Lalisa Dimtu kebele. Accordingly, the third house was randomly selected from starting point.

### **3.2.3. Data analyses**

The data gathered through the instruments was analyzed by using both quantitative and qualitative methods. The quantitative data was analyzed by SPSS version 20, descriptive statistics and Excel Microsoft word. Qualitative data was narrated in words in the text. Data was later presented using figures, tables and percentages. Depending up on the findings conclusion and recommendations given at the end.

## 4. RESULTS

### 4.1. The reasons behind buffalo poaching

According to questionnaire survey question, “does buffalo come to your agricultural lands and/or living compounds?” 68.42% (n=78) of respondents claimed that buffalo come to their agricultural lands whereas 31.58% (n=36) of the respondents said that buffalo was not come to their agricultural lands (Figure 4).

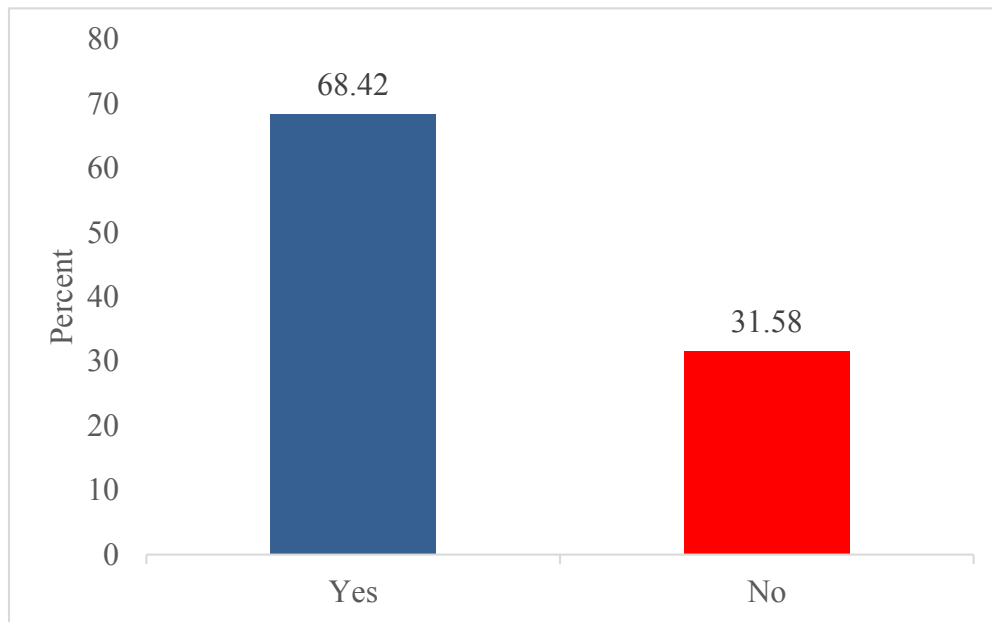


Figure 4. Percentage of respondents buffalo sighting in their agricultural lands

According to the questionnaire survey undertaken, 64% (n=73) of the respondents claimed that buffaloes cause crop damage in the study area while 36% (n=41) of the respondents said that buffaloes not cause problems (Table 1 and Figure 5).

*Table 1. People response towards buffalo problem*

Is buffalo cause problem	Frequency	Percent
Yes	73	64.0
No	41	36.0
Total	114	100.0



Figure 5. Maize destruction by buffaloes (A) matured (B) seedlings

Based on the question, for how long problems caused by buffaloes has been happening?

Out of the respondents, 65.8% (n=48) claimed that the problem has become prominent within the last three years (Table 2).

**Table 2: People response on the duration of the problems caused by buffaloes**

<b>For how long problems have been happening</b>	<b>Frequency</b>	<b>Percentage</b>
1-3 years	48	65.8
4-10 years	12	16.4
11-15 years	8	11.0
Before 15 years ago	5	6.8
Total	73	100.0

Regarding the seasonal distribution of the crop damage problem, 75.3 % (n=55) of the respondents were said that it occurs during the wet season (Table 3).

**Table 3: People response on which season buffaloes cause problem**

<b>In what season does problems caused problem?</b>	<b>Frequency</b>	<b>Percentage</b>
Dry season	16	22.0
Wet season	55	75.3
Irrespective of season	2	2.7
Total	73	100.0

All respondents replied that they guard their agricultural lands, kill buffaloes and remove forests from the study area as a counter-measure to buffalo problem. In addition, most of the households affected by buffaloes did not report the incident to any government body.

According to field observations and discussions with informants, the main buffaloes group taking part in crop raiding was the bulls with group size of 3 to 6, sometimes followed by cows and calves with herd size of 5 to 8 buffaloes. The buffaloes usually came to crop lands in the evening from 9:00 pm to 12:00 pm and usually stayed in crop lands until 4:00 am to 6:00 am.



Figure 6. Maize damage: before (A) and after (B) by buffalo

This figure shows an overnight crop damage by buffaloes.

Key informants say that they use different traditional methods to reduce crop damage due to buffaloes. These include staying in the field watching, guarding, producing noise by shouting loudly, keeping fire burning to chase away approaching buffaloes and even kill the buffaloes. However, all of them reported that these preventive measures are not effective.

According to the observations and the discussion with the key informants on problems caused by buffaloes, buffaloes brought tsetse flies and as a result livestock were attacked by Trypanosoma. Other problem observed due to the presence of buffaloes in the study area was sleeplessness and extra labor cost on family members.

According to the questionnaire survey, 66.67% (n=76) of the respondents claimed that buffalo poaching had been practiced in the study area while the rest 33.33% (n=38) said it was not practiced in the study area (Figure 7).

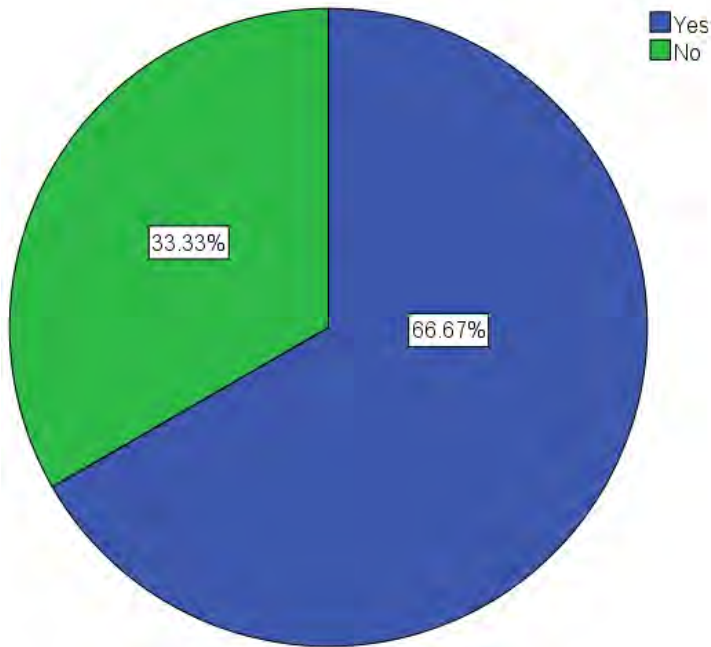


Figure 7. Percentage of respondents on buffalo poaching practice

Out of those claiming the presence of buffalo poaching, 38.2% (n=29) said it was practiced until 1993 while most of the respondents (61.8%, n=47) claimed that it is practiced even now in the study area. Regarding the period at which buffalo poaching was intense, most of the respondents (80.3%, n=61) said it was very intense during the power vacuum (in 1993), 13.2% (n=10) of them said it was practiced before 1993, while the remaining (6.5%, n=5) of respondents said that they did not know about it (Figure 8).

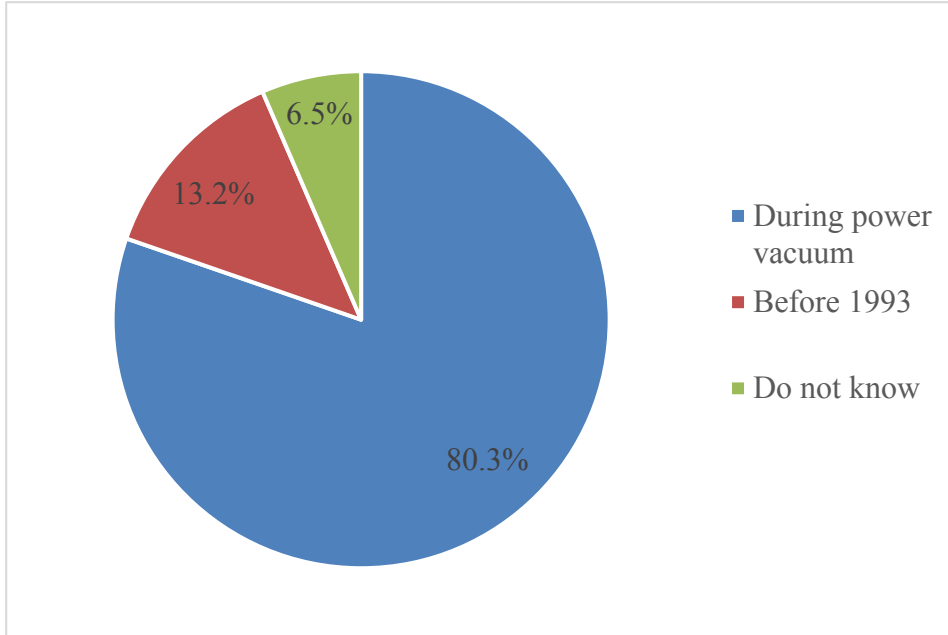


Figure 8. The period at which buffalo poaching was intense

According to the discussions made with elders and informants, the main causes reported to contribute for intense buffalo poaching during the Transitional Government were illegal firearm trade, political and social instability in the country.

Respondents were also asked whether their close relative have killed buffaloes. Accordingly, 63.16% (n=72) of respondents claimed that their close relatives had killed buffaloes, while the rest 36.84% (n=42) of the respondents said they did not (Figure 9).

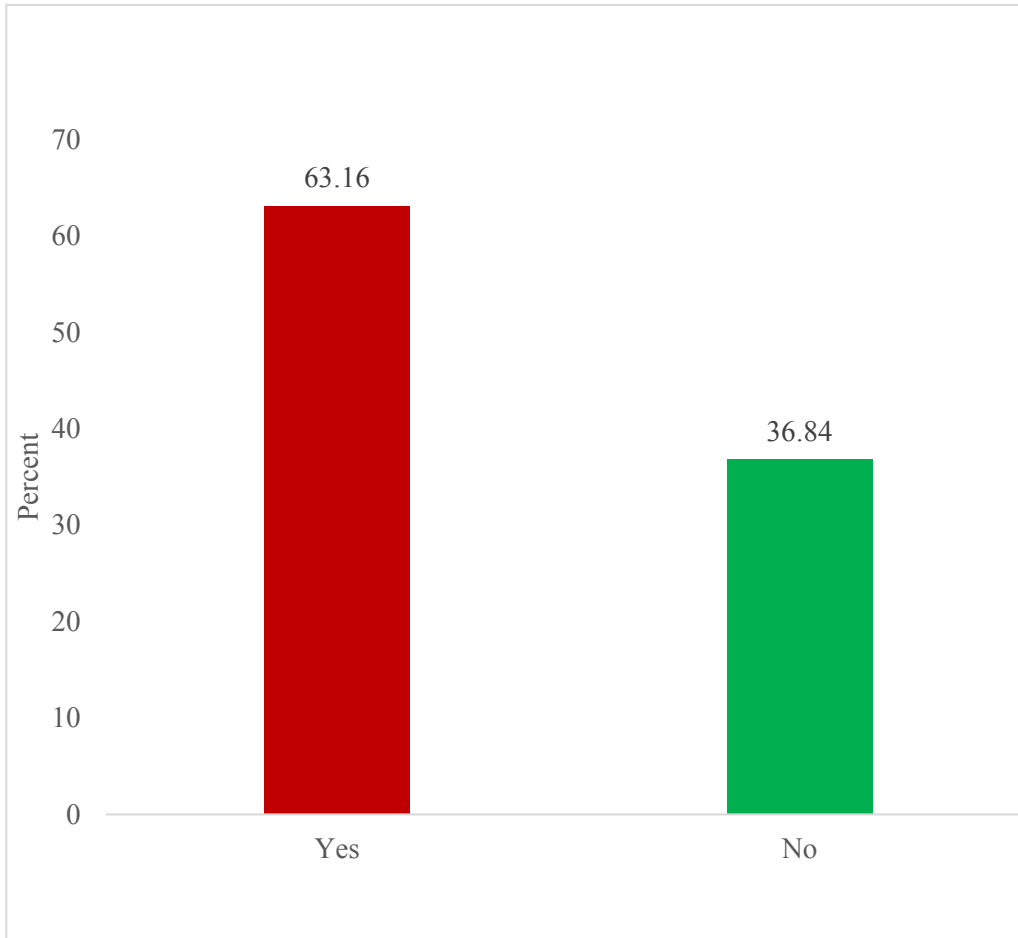


Figure 9. Percentage of respondents whether their close relatives had killed buffaloes

All (n=72) respondents above replied that their primary motivation for poaching was the culture they inherited from their ancestors.



Figure 10. Female Buffalo killed by a poacher.

This buffalo was butchered and divided among the locals according to individuals' payment per share of the meat. Individuals who had killed African buffalo are socially acknowledged as strong and superhero. Trophies taken from African buffalo include skin, tail and the horns along with forehead skin (Figure 11).



A)



B)

Figure 11. Trophies from buffaloes poaching (A) tail and (B) horn

Recent trophy hanged in front of poacher's house as a sign of heroism. Such trophies are found in front of several poacher's houses and have not been discouraged so far.

Trophies were brought as an evidence of success in killing. However, taking trophies from died African buffalo shot by others had no social acceptance rather it brings criticism over an individual. Fourty four point seven (n=51) of the respondents stated that illegal trophy hunting served as income generation. However, most of the respondents (55.3 %, n=63) replied that income generation as initiatives of poaching was minimal. The income generated was said to be not more than subsistence.

#### **4.2. The impacts of poaching on the buffaloes**

Direct observations and discussion with the key informants showed that the population status of buffaloes significantly changed in the last one and half decades. About 20 years ago, buffaloes were common in the study area. At present, three buffaloes are observed in the study area only during the wet seasons (Figure 12) when sufficient grasses establish and migrate out of the study area when the grasses dry out.



Figure 12. Buffalo observed in the study area

According to questionnaire survey on the impacts of poaching on buffaloes in the study area all respondents (100%) said that poaching makes migration of buffaloes from the study area and hence observed in the study area seasonally. In addition, respondents replied that poaching caused death of buffaloes (Figure 10 and 13) and injury on buffaloes that increase conflict formation with humans.



Figure 13. Carcass of dead female buffalo shot by poachers and later died after escaping in the Didessa River valley, Diga Woreda.

#### **4.3. People attitude towards future conservation of buffaloes**

With regard to benefits derived from the presence of buffaloes in the study area, 14.04% (n=16) of respondents claimed that they are benefited from their presence and the rest 85.96% (n=98) of the respondents claimed that they did not see any benefit (Figure 14).

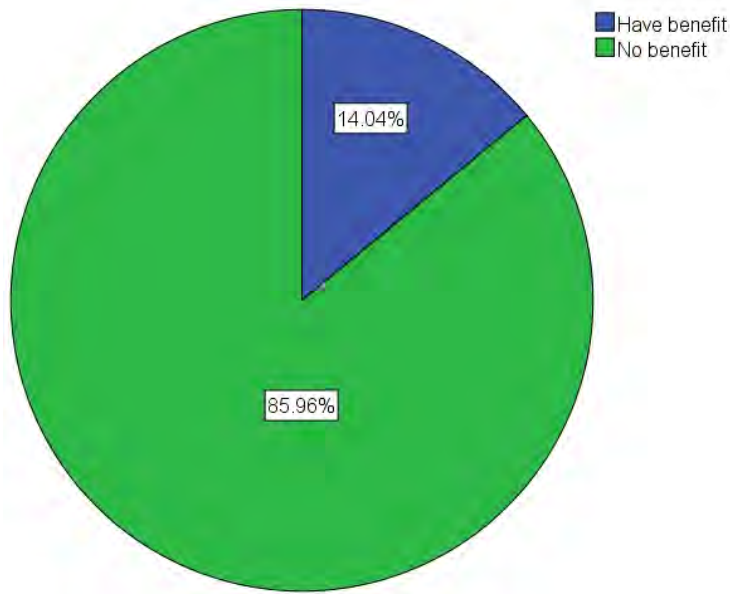


Figure 14. Percentage of respondents on the benefit of the presence of buffaloes

Twenty four point six percent (n=28) of respondents replied that they are happy if buffaloes are not in their area while 45.6 % ( n=52) of the respondents are feel unhappy and the remaining 29.8 % ( n=34) of the respondents were neutral (Table 4).

**Table 4: People attitude towards the absence of buffaloes in the study area**

<b>THEIR FEELING</b>	<b>FREQUENCY</b>	<b>PERCENTAGE</b>
<b>HAPPY</b>	28	24.6
<b>UNHAPPY</b>	52	45.6
<b>NEUTRAL</b>	34	29.8
<b>TOTAL</b>	114	100

With regard to the need and importance of establishing protected area, 69.3 %(n=79) of the respondents did not know the benefits and the need for the establishment of protected areas and the conservation of wild animals including buffaloes while 30.7 %(n=35) of the respondents claimed that there are benefits obtained from the establishment of a protected areas and conservation of wild animals (Figure 15).

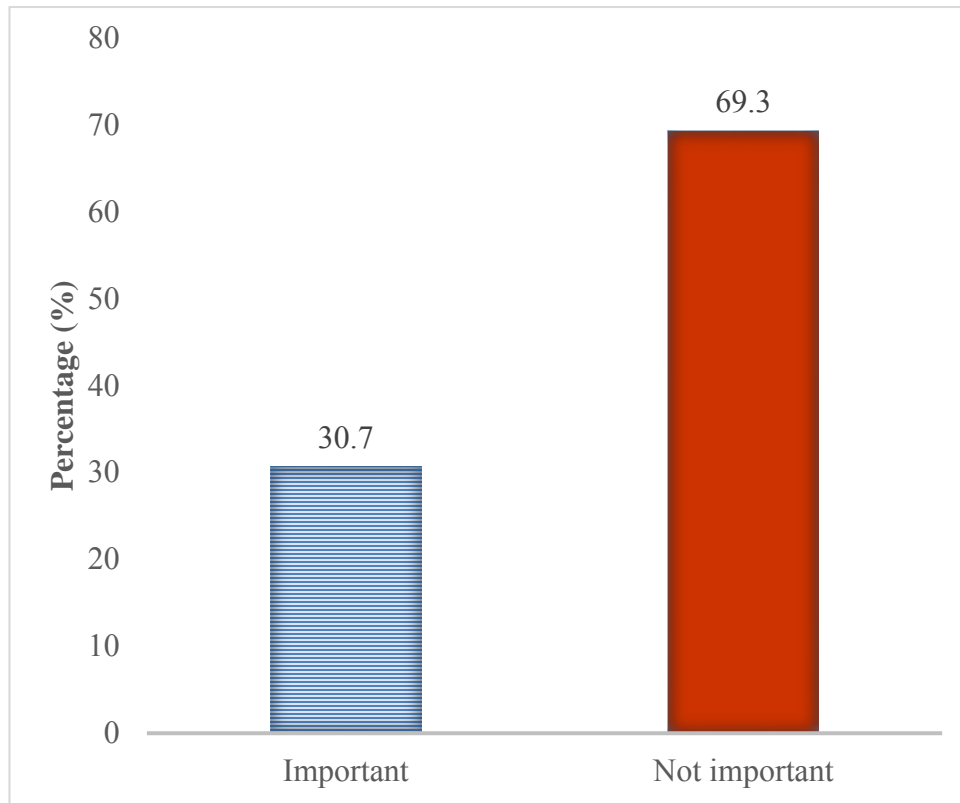


Figure 15. Respondent's awareness on the need and importance of establishing protected area

Thirty six percent (n=41) of the respondents believe that they will get benefits from protecting the area, but 64 % (n=73) of the respondents did not think that there is any future benefits out of protecting the area (Table 5).

**Table 5. Respondent's prediction on the future benefits from protecting the area**

<b>Do you think you get any future benefits from protecting the area</b>	<b>Frequency</b>	<b>Percentage</b>
Yes	41	36
No	73	64
Total	114	100

75.4% (n=86) of the respondents responded that they have fear of conservation of buffaloes in the area while the rest 24.6% (n=28) have no fear about it (Figure 16).

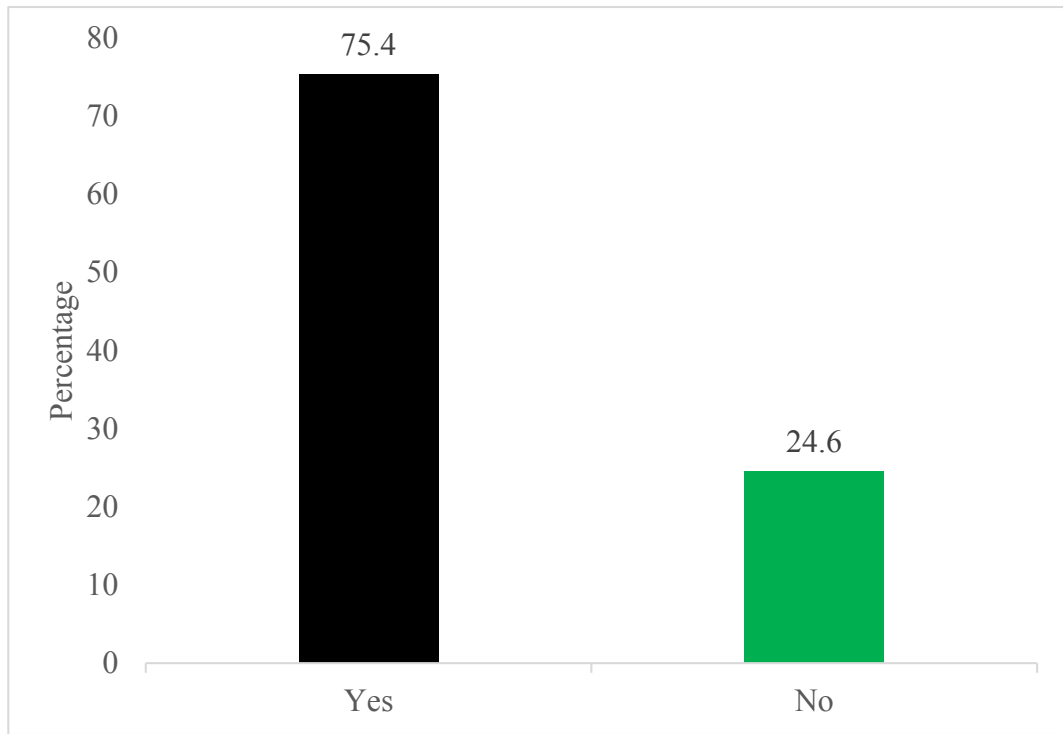


Figure 16. Percentage of respondents on the fear of conservation of buffaloes in the study area

## **5. DISCUSSION**

### **5.1. The reasons behind buffalo poaching**

According to the questionnaire survey undertaken, 64% (n=73) of respondents claimed that buffaloes cause crop damage in the study area while 36% (n=41) of the respondents said not.

The majority of the people of study area responded as they have fear following problems being caused by buffaloes on them; that their human safety was at stake. This was as result of these animals which would cause destruction of crops, transmission of diseases to livestock and other problems observed as presence of buffaloes in the study area causes sleeplessness and extra labor cost on family members.

Thouless (1994) mentioned that the extent of crop raiding varies depending on habitat type, buffalo use pattern and distance from the boundary. 75.4% of respondents replied that crop raiding by buffaloes takes place during wet season with its peak in June and July, which may be due to the optimal stage of growth of cultivated crops.

Regarding the period at which buffalo poaching was intense, most of the respondents (80.3%, n=61) said it was very intense during the power vacuum in 1993. This was due to the government transition and the absence of law and order in this area. However, the presence of law and order did not stop buffalo poaching even these days as observed from the carcasses and poached animals during this study. The political and social instabilities are known to be the major factors, which aggravate the loss of natural resource, including wildlife of most countries (Leuthold, 1976; Cumming *et al.*, 1990).

It will get worse when illegal firearm trade is intensified. The 1993 government change in Ethiopia resulted in extensive illegal firearm trade in the country and consequently in the loss of wildlife resources. The ineffective law enforcement efforts by the local government; the very less

punishment of individuals involved in poaching and the availability of firearms during the current study period were perhaps the main cause of the high incidence of poaching.

The failure to take action to reverse illegal firearm possession makes the country lose its wildlife resources due to poaching (Shibru Tedla, 1995; Yirmed Demeke, 1997). Despite the fact that having illegal firearm is punishable by law in Ethiopia, poachers successfully eluded and carried firearms openly to use as they like in this study area and nearby districts (Mosisa Geleta, 2014).

As all (100%, n=72) respondents replied that their primary motivation for poaching was culture inherited from their ancestors. According to this study, killing buffalo was perceived culturally as hero and increases social acceptance. For instance, during social aggregations, such individuals were given special position (sit relatively at the upper position) while others take chairs found at lower position. They are frontiers throughout any journey made with friends, colleagues and neighbors. In addition, they never drink in broken, less quality and small glasses/cups, and in partially filled glass/cup. This can be insured by cutting parts of animals such as skin of tail and skin of forehead as trophies. Recent studies have also shown the same response from nearby by communities in the Didessa Valley (Mosisa Geleta, 2014).

Any society has its own culture, norms and values. However, some cultural heritages might have a lot of social, economic, health and environmental problems. Not all cultures might be equally important, and some are not recommended to be practiced. Poaching buffalo and collecting trophies to be called superhero in the society is common in the culture of the study area. For instance, during group work and other social assemblages, African buffalo killer began to sing push over others (especially peoples with which he had no good relationships) to indicate his superiority, and demoralizes individuals who had not gone to poaching. The relatives and friends of killer encouraged a singer to sing more.

The disparities between the two social groups cause long lasting social upset and crisis. The social acceptance of individuals who had not gone to poach African buffalo at least for one trip is very low. Gun used for the activity was rented from indigenous Gumuz people living around the poaching area. A poacher paid up to 1,000 Ethiopian birr for gun rent at the end of the poaching day. Sometimes, conflict may be generated between poacher and gun rent provider when poachers lag paying gun rent. This might also gradually lead to cause conflict between different groups which once happened difficult to resolve it (Mosisa Geleta, 2014). As replied by respondents, the period of poaching was from March to June. This period was selected because poaching area was not densely covered with bushes or shrubs making observation of buffalo easier from a distant. However, it was the period of preparing agricultural land and sowing of corn and sorghum in the residence areas of poachers. When they back from poaching, sowing time for most crops was passed which might lead to poverty and famine in the next season. The poachers also need money to buy bullet and to pay for gun rent. If they have no enough money for bullet and gun rent, they borrowed to repay by selling crops sown. Crops sown unseasonably were less productive, not enough for subsistence and unable to fill money borrowed for poaching. If such activities were repeated annually, the economy, livelihood and living standard of the societies will collapse all of a sudden. Hence, all materials, which were used during poaching, need sufficient money that may affect their economy. According to their culture, a poacher who was successful was not expected to work for a year. This is because it is the time to grow his hair longer for more than a year and showing of his success.

According to the culture of the study area, the trophies are drawn on the wall or gate of house and/or gate of house fence. Some respondents (44.7 %, n=51) were stated that illegal trophy hunting served as income generation, as a successful poacher is relatively rich. This is because

successful poacher obtains material or financial reward from friends and relatives. As replied by most respondents (55.3 %, n=63), currently the income generation as initiatives of poaching was minimal. This is because the amount of reward was insignificant as the income that most household gets per year does not exceeded subsistence. Poaching is relatively minimized due to patrolling around poaching areas, but it is not sufficient. However, the current killing spread does not show any evidence of patrolling or even remote control system by the regional wildlife authorities. According to field observation and FGD, after buffalo killed people use its meat as source of food and the numbers of African buffalo killed were varied during the past four years. For example, in 2012 seven, in 2013 five, in 2014 six and in 2015 three buffaloes were killed by poachers. Research in the current study area is severely limited on poaching of buffaloes since the African antelope database does not consider the presence of African Buffaloes in current study area (East, 1999; Habte Jebessa Debella, 2016).

## **5.2. The impacts of poaching on buffaloes**

The status of buffaloes was significantly changed in the last one and half decades. About 20 years ago, buffaloes were common in the study area. However, the present study shows that buffaloes were come to the study area during wet season and migrated to other area in the dry season.

The extended wet season distribution of buffaloes might be associated with the availability of water in small streams and temporary swamps, the growth of fresh leaves of broad-leaved grasses in the woodland and wooded grassland habitats and the availability of long un-burnt grass, which is preferred by buffaloes (Smith *et al.*, 1995; DeBoer *et al.*, 2000). On the other hand, the reduced distribution of the buffaloes in the dry season might be due to the drying out of small streams and ponds, shading of leaves of grasses in woodland and wooded grassland habitats, incidence of fire and intensified illegal activities. The settlement program undertaken in Sholo village, near to the

Didessa valley increased deforestation in the study area for agricultural activities, which directly increased the disturbance and migrations of buffaloes out of the study area to Illu Ababor zone, Cawaqa woreda.

As all respondents (100%, n=114) responded that poaching pressure forces buffalo to migrate to other areas. In addition, respondents replied that poaching makes death and injury on buffaloes that increase conflict formation with humans as injured buffaloes are dangerous when encountered. Poaching is an inefficient form of utilization of a wildlife resource due to high levels of wastage, high impacts on populations due to the lack of gender/age selectivity of the harvest and the failure to attract the tourism. In Zimbabwe for example, poachers capture <1% of the wildlife resource that they destroy (Lindsey *et al.*, 2012). Through efficient, regulated and selective harvest, legal cropping of wildlife can potentially produce significant quantities of meat on a useful basis. Legal production of meat can also result in the production of a fresher, more hygienic, safer product with lower risks of zoonotic diseases such as brucellosis, and less wastage due to spoiling (Lindsey and Tambling, 2009; Alexander *et al.*, 2012).

### **5.3. People attitude towards future conservation of buffaloes**

Because of the negative impact buffaloes have on the livelihoods of villager and the imposed wildlife laws on the setting up of protected areas, communities were mostly excluded from legal access from the park resources they used to freely enjoy makes them less tolerable to buffaloes than other species (Malima, 2004). With regard to the need and importance of establishing protected area, 69.3 %(n=79) of the respondents did not know the benefits and needs for the establishment of protected areas and the conservation of wild animals including buffaloes while others respondents (30.7 %, n=35) claimed that there are benefits expected from the establishment of a protected areas and conservation of wild animals. Therefore, lack of awareness about the need

for wildlife conservation, lack of benefits and absence of any hope of getting future benefit from wildlife including buffaloes makes to further reduce the level of tolerance of communities living around the study area.

## **6. CONCLUSION AND RECOMMENDATION**

### **6.1. Conclusion**

Poaching is an inefficient form of utilization of a wildlife resource due to high levels of wastage, high impacts on populations due to the lack of gender/age selectivity of the harvest; the failure to capture the tourism. The present study indicated that the practice of poaching in Lalisa Dimtu district area was common and frequently exercised as a culture. Therefore, main motive for the activities of poaching was a cultural heritage passed down from their ancestors. Killing game animals is considered culturally as hero and increase social acceptance. The presence of freshly killed buffalo, remains of dead buffaloes and trophies hanged up on the wall or in front of the poacher's house indicate as poaching of buffaloes still practiced in the study area. This hanging of trophy is not discouraged by any authority in the study area.

Poaching buffalo was common and conducted on yearly basis during March to June. As poaching was conducted during the period of land preparation for agriculture, the activity had a severe effect on agricultural productivity. In addition, successful poachers are not involved in any task for a year, which in turn affects their economy. Materials bought for poaching and gun rent also had an impact on the economy of the people. Sometimes, conflict rose among buffalo killers and non-buffalo killers when successful poacher demoralizes others. Buffalo is the target species for poaching. Such targeted poaching causes a serious status decline of the species and there is no stakeholders follow up the poachers in the area. Poaching forces buffalo to migrate to other areas. In addition, poaching makes death and injury on buffaloes that increase conflict formation with humans as injured buffaloes are dangerous when encountered.

Lack of awareness about the need for wildlife conservation, lack of benefits and absence of any hope of getting future benefit from wildlife including buffaloes makes to further reduce the level

of tolerance of communities living around the study area. Hence, in order to control this problem, public awareness creation and apply the laws for any one whose violation of the regulation can be required.

## **6.2. Recommendations**

### **6.2.1. Enhance community conservation education and research**

Conservation related education is very important as a long-term approach in preventing the poaching problem. This will create awareness within local communities, especially the young people from nursery school on the prevention measures on the loss of buffaloes. In addition, education can also include the value and importance of conserving buffaloes. This will ensure sustainability of the different species of wildlife, because the young people will be the conservationists and guardian of tomorrow. Moreover, further research on the impact of buffalo poaching and the population of buffalos in the study area is recommended.

### **6.2.2. Improving governance and law enforcement in the study area**

Governance is the most important factor of buffalo poaching. The consequences of poor governance are likely to manifest themselves throughout facilitating the movement of poaching. Poor governance prevents the improvement of the human condition, driving the rural poor to poaching for sustenance, which in turn provides incentives for underpaid and demotivated officials to facilitate and benefit from the movement of poaching of buffaloes. Therefore:

- ✓ Governance should be improved to address the problem of buffalo poaching. Moreover, wildlife management authority should ensure that, surrounding community receive adequate patrolling. In addition, the law enforcement staff should be well housed, equipped, well trained and adequately supported.

- ✓ The regional and local resettlement programs are bringing too much people around the study area that are natural habitats for buffaloes and other wild animals. It will enhance human-buffalo conflict in these areas. So, to overcome this problem, concerned bodies should be work on the way in which the peoples exist without affecting wildlife by protecting the area with the involvement of the local communities.
- ✓ The people living around the study area have poor understanding of the importance of conserving wildlife resources. This has made the people careless about the resource and they do not stop killing the animals and destroying their habitat for short-term benefit. As long as there is lack of active participation and support of the local community, the effort of concerned bodies will not bring a significant change. Therefore, awareness creation programs should be encouraged in a way that people at the grass root levels will be reached.
- ✓ The concerned bodies should work on the way income can be generated from wildlife utilization involved community based development projects in the study area and maximum effort is needed to secure grant from different sources to develop peoples in and around the study area.
- ✓ The stakeholders of the regional enterprise should follow the finding of this research and ought to be take major action which reverse this unwelcome activities of poaching.

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**APPENDICES**

**APPENDIX I. QUESTIONS RAISED IN FOCUS GROUP DISCUSSION**

**A/ THE REASONS BEHIND BUFFALO POACHING**

1. Is buffalo found in this area? \_\_\_\_\_
  
2. Is there any problems caused by buffaloes in your area?
  
3. Is there the practice of killing buffaloes in your area?
  
4. In your opinion is it poaching of buffalo increased, decreased or remained the same in your area?
  
5. Do you know the number of buffalo killed in the past four years? (2012, 2013, 2014 & 2015)\_\_\_\_\_

If yes, how many? \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_ & \_\_\_\_\_ respectively.

6. In your opinion what are the main reasons why people engage in poaching activities in your area?

**B/ THE IMPACTS OF POACHING ON BUFFALOES**

1. When you compare the buffalo’s status of the present and the past, is it increasing or decreasing?

\_\_\_\_\_

What do you think are the main causes for this change?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**APPENDIX II. QUESTIONNAIRES**

**OPEN AND CLOSED QUESTIONNAIRES PREPARED AND DISTRIBUTED TO  
RANDOMLY SELECTED PEOPLES**

Writing your name is not required

Kebele - \_\_\_\_\_

1. Sex – A. Male    B. Female
2. Age-A.25–30 years    B. 31–40 years    C. 41–60 years    D. >60 years
3. Level of education? A. None    B. Primary level    C. At least Secondary level and above
4. Occupation? A. Employed or involved in agricultural activities    B. Unemployed
5. How long have you been stayed in this area? A. 1- 3 years    B. 4 – 10 years    C. 11 – 15 years  
D. More than 15 years

**A/ THE REASONS BEHIND BUFFALO POACHING**

1. Does buffalo come to your agricultural lands and/or living compounds?
2. Do buffalo create problem on human beings and/or their property (crops, crop stores, livestock, etc.) in your area? \_\_\_\_\_
  - 2.1. If yes, please describe incidents you remember.
    1. \_\_\_\_\_
    2. \_\_\_\_\_
  - 2.2. For how long problem caused by buffaloes has been happening? (1 – 3), (4 – 10), (10 – 15), (Before 15 years ago)
  - 2.3. In what season does it occur? (Dry/Wet/Irrespective of season)  
\_\_\_\_\_

2.4. What are the counter-measures you take?

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

4 \_\_\_\_\_

2.5. Are these counter-measures effective? Yes/No.

If No, why not?

\_\_\_\_\_

3. Was buffalo poaching practiced in your area? \_\_\_\_\_

If yes, when? \_\_\_\_\_

How about now? \_\_\_\_\_

4. When was/is the buffalo killing very intense?

\_\_\_\_\_

5. What were/are the causes for intense buffalo poaching in the above period?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

6. Did you or your close relative kill buffalo? (Yes/No) \_\_\_\_\_

If Yes, why? \_\_\_\_\_

**B/ THE IMPACTS OF POACHING ON THE BUFFALOES**

1. What are the impacts of poaching on buffaloes in your area?

a. \_\_\_\_\_

b. \_\_\_\_\_

c. \_\_\_\_\_

d. \_\_\_\_\_

**C/ LOCAL PEOPLE AWARENESS TOWARD FUTURE CONSERVATION OF BUFFALOES**

1. Do you get any benefit so far from the presence of buffalo in this area? (Yes/No) \_\_\_\_\_

If yes, what benefit?

\_\_\_\_\_  
\_\_\_\_\_

2. What do you feel if buffaloes are not here?

A/ Happy

B/ Unhappy

C/ Nothing

3. Do you feel you are losing due to the presence of buffaloes in this area? (Yes/No) . \_\_\_\_\_

If Yes, what? \_\_\_\_\_

\_\_\_\_\_

4. Do you know why the government wants to conserve buffaloes? (Yes/No). \_\_\_\_\_

If yes, why? \_\_\_\_\_

\_\_\_\_\_

5. Do you think you get any benefit from buffaloes in the future? (Yes/No) \_\_\_\_\_

If yes, what kind of benefit(s)?

\_\_\_\_\_

6. Do you have fear of conservation of buffaloes in this area? (Yes/No). \_\_\_\_\_

If Yes, why? \_\_\_\_\_

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❖ Are there any other information/comments you would like to share with us regarding poaching of buffaloes in your area? \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**THANK YOU!**